opposition of 1883, *Hyperion* came to conjunction about one day sooner than the times given in that *Ephemeris.*

The observations of *Hyperion* made by Mr. Lassell during the opposition of 1852 are important, since they form the earliest complete series that we have. These observations are published in the *Monthly Notices*, vol. xiii. p. 181. I hope that Mr. Marth or some one familiar with Mr. Lassell's method of work, may be willing to revise the reductions and publish the observations with more detail.

1884 *April* 10.

Observations of the Companion of Sirius, made at the Dearborn Observatory, Chicago, U.S.A. By Prof. G. W. Hough and S. W. Burnham.

Date.	*p.*	*s.*
1884·025	37°·9	8″·60
·057	36·7	8·35
·170	37·0	8·64
·186	37·1	8·39
·197	36·5	8·78
·200	36·5	8·58
·203	36·9	8·37
·217	37·0	8·51
·225	36·1	8·51
·233	35·9	8·30
·252	35·9	8·58
Mean = 1884·179	36·7	8·51

(*Observations by S. W. Burnham.*)

Date.	*p.*	*s.*
1884·057	37°·2	8″·60
·167	39·3	8·33
·184	33·2	8·56
·195	36·4	8·11
·197	35·3	8·50
·200	35·8	8·31
·214	37·0	8·34
·217	36·3	8·22
·230	37·9	8·44
·233	35·5	8·51
Mean = 1884·19	36·4	8·39

Note on a Method of Reducing the Friction of the Polar Axis of a Large Telescope. By A. A. Common.

In large telescopes the friction of the polar axis is generally reduced by means of wheels placed so as to take from off the upper and lower bearings the greater part of the total weight. The points or lines of contact between those wheels and the axis are very small, and the least inequality in shape or in the hardness of the metal must produce for slow motions an extremely irregular action.

The plan of floating off some of this weight, and so reducing the friction, has been employed by me in the construction of an 18-inch and a 3-foot Reflector, but in both cases only in a partial manner.

In the account I gave (in vol. xlvi. of the *Memoirs* of this Society) of the mounting of this latter telescope, I mentioned that this principle could be applied in a very complete manner by so arranging matters that the centre of gravity of the moving parts should be over the centre of flotation.

I had then considered several ways of doing this. Two of these I now propose to mention more particularly, and I have little hesitation in doing so, as the working of the 3-foot telescope has been so good in this respect as to make me think that the complete application of this principle would be the best way we could have of ensuring the proper and equable motion of the telescope in time. The first plan, arranged for the 3-foot, mounted on what is known as the German form of mounting, is simple. It is to enlarge the diameter of the polar axis at the upper part by a drum or cylinder of cast iron, of such a diameter and depth as to get the requisite displacement of mercury contained in an outer cylinder surrounding the drum spoken of. Altering the figures to suit an object-glass of, say, 40 inches aperture and of about 60 feet focal length (as the largest that may be at present thought of), we should have as the weight brought down to the centre of the declination axis something like six tons. This could be dealt with effectively by making the drum on the polar axis about 6 feet diameter and 3 feet deep, something less than one-half of this being immersed. These figures are, of course, merely approximate, but if the size and weight of the object-glass be known, the rest can all be easily calculated.

Here, from the low position of the centre of gravity of the whole and its proximity to the upper bearing of the polar axis, it is possible to get the centre of gravity and the centre of flotation in a vertical line in the way indicated.

This plan was not used: the form of mounting determined on as regards that part above the polar axis required that the centre of gravity of this part should be some distance from the upper bearing; the following arrangement was then planned to meet this requirement, but it also was not used, as it involves